

## ABSTRACT

The proposed use of the invention is for the *ex vivo* preservation of human and animal donor organ allografts during transportation from the donor to the recipient for the purpose of transplantation. In addition to its use for *ex vivo* myocardial preservation, this PEG-Hb solution has tremendous potential utility for *in vivo* myocardial preservation during open heart surgery as well as a blood substitute or blood replacement during or following surgery of any sort, including open heart surgery. The invention comprises a polyethylene glycol coated bovine hemoglobin based solution for the purpose of *ex vivo* donor organ preservation and the use of the same. The fundamental principle of the solution is to provide an oxygen, nutritional and electrolyte environment to the tissue of the donor organ that is conducive to *ex vivo* preservation such that the donor organ will regain acceptable function post transplantation. The solution provides oxygen, a carbohydrate energy source, continuous metabolite washout and continuous perfusion with an isotonic, normokalemic, hypocalcemic solution that drastically improves myocardial preservation over current techniques considered the standard of care. Donor organ preservation for transplantation is performed using ischemic hypothermic immersion storage in saline solution using hypothermic perfusion preservation with oxygen carrying hemoglobin solution. The solution contains PEG-Hb, human albumin, dextrose, heparin sodium, lidocaine HCl, MgSO<sub>4</sub>, KCl, CaCl<sub>2</sub>, THAM, NaCl, NaHCO<sub>3</sub>, Na<sub>3</sub>PO<sub>4</sub>, without which PEG-Hb is lethal to the myocardium and cannot be used for the purpose of effective organ preservation.